

Application Serial No. 09/807,704
Reply to final Office Action of November 18, 2008

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PATENT
Docket No. CU-2513

Amendments To The Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1-52 (canceled)

53. **(currently amended)** An improved separation process for production of oil from a biological material, the process comprising the steps of:

freezing the biological material such as to make membranes surrounding cells in the frozen biological material brittle and rupture to liberate contents of the cells wherein the freezing step the biological material is frozen to a temperature of 0°C to -50°C wherein the freezing step is performed at a rate of about -1 °C / minute;

treating mechanically the frozen biological material to produce particles having a mean particle diameter not exceeding 50 millimeters wherein the step of treating mechanically of the material is at least one of the group consisting of grinding, milling, chopping and pressing;

thawing the treated biological material to a first temperature wherein the thawing step is performed using heating selected from the group consisting of microwave heating, heat exchanging heating, infra-red heating, and electric conduction heating;

separating oil from the thawed biological material at the first temperature;

recording a first yield of oil from the thawed biological material at the first temperature;

warming the treated biological material to another temperature;

isolating oil from the thawed biological material at the another temperature;

recording another yield of oil from the thawed biological material at the another temperature; **and**

obtaining an optimum temperature at which to separate oil from the biological material by considering factors selected from the group consisting of oil yields, peroxide concentration numbers, percentages of free fatty acid, vitamin A concentrations, viscosity and anisidine values,

wherein the biological material is selected from the group consisting of fish liver,

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whale blubber, soy beans, sunflower seeds, olive seeds, corn seeds, algae, yeast, cell culture material, and bacteria.

54. (previously presented) The process according to claim 53, further comprising the steps of:

- adding a pre-treatment compound to the material prior to mechanically treating the material, wherein said pre-treatment compound is at least one of the group consisting of an enzyme, a solvent, an emulsion-bursting material, and an emulsion-inhibiting solution, wherein the enzyme is selected from the group consisting of cellulase, collagenase and lysozyme. wherein the solvent is hexane, wherein the emulsion-bursting material is salt;

- avoiding forming three phases in which the three phases comprise a proteinaceous phase, a free water phase, and an oil phase;

- determining a denaturing temperature by visually inspecting the oil for visible stringy agglomerates and agglomerate precipitates

- refining the oil;

- deodorizing the oil; and

- adding an antioxidant containing tocopherol to the oil.